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Management Intensive Grazing of Stockers at the Andrew Jackson Demonstration Farm (1996 – 1998)

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Abstract
The Andrew Jackson Demonstration Farm (AJDF) is located in central Jackson County in east central Iowa. A board of directors operates the farm for the purpose of demonstrating different production practices and management strategies. From 1996 to 1998 management intensive grazing practices and the grazing of stockers on a combination of permanent and tillable pasture have been demonstrated. Grazing strategies or practices demonstrated during these years included establishment of Eastern Gamagrass and Big Bluestem, variable density grazing, measuring forage on-offer, estimating dry matter intake, grazing corn, pasture renovation, and fencing and water systems. Production performance data were gathered for the three years stockers that were grazed. During this time the stockers averaged 121 animal days of grazing, a 1.1 head per acre stocking rate, a 1.85 pound average daily gain, and 228 pounds of gain per acre. The financial measures evaluated the value of gain on pasture and the pasture cost of the gain. The value of gain per pound was positive for 1996 and 1997 at $.58 and $.52 whereas in 1998 it was a -$.04. Pasture costs per pound of gain ranged from $.12 to $.16. Production performance is only one part of the profit picture when evaluating a stocker operation. Buysell margins are the other significant part that can greatly impact the profit potential of a summer grazing program.

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Summary

The Andrew Jackson Demonstration Farm (AJDF) is located in central Jackson County in east central Iowa. A board of directors operates the farm for the purpose of demonstrating different production practices and management strategies. From 1996 to 1998 management intensive grazing practices and the grazing of stockers on a combination of permanent and tillable pasture have been demonstrated. Grazing strategies or practices demonstrated during these years included establishment of Eastern Gamagrass and Big Bluestem, variable density grazing, measuring forage on-offer, estimating dry matter intake, grazing corn, pasture renovation, and fencing and water systems. Production performance data were gathered for the three years stockers that were grazed. During this time the stockers averaged 121 animal days of grazing, a 1.1 head per acre stocking rate, a 1.85 pound average daily gain, and 228 pounds of gain per acre. The financial measures evaluated the value of gain on pasture and the pasture cost of the gain. The value of gain per pound was positive for 1996 and 1997 at $.58 and $.52 whereas in 1998 it was a -$.04. Pasture costs per pound of gain ranged from $.12 to $.16. Production performance is only one part of the profit picture when evaluating a stocker operation. Buy-sell margins are the other significant part that can greatly impact the profit potential of a summer grazing program.

Introduction

Jackson County is the leading beef cow/calf county in Iowa and has over 35,000 acres enrolled the Conservation Reserve Program (CRP). Improved production of pasture with more intensive grazing management can increase the competitiveness of cattle businesses and may be a viable option for fragile but productive land coming out of the CRP program.

The purposes of this demonstration were to show production and economic outcomes for steers in an intensive rotational grazing system on highly erodible land as well as to demonstrate management intensive grazing practices that may enhance the competitiveness of a grazing enterprise.

Materials and Methods

The steers were grazed on 51 acres -- 24 acres were primarily permanent bluegrass pasture with about 40% covered by timber, and 27 acres were tillable mixed pasture. The Corn Suitability Rating (CSR) for the permanent pasture ranged from 5 to 60 with most of it in the lower range. The CSR for the tillable pasture is variable with the ratings ranging from 30 to 65.

Summer grasses were introduced to address the slow down in pasture growth common during the summer months with cool season grasses and to provide additional days of pasture rest during critical periods of the summer months.

Eastern Gamagrass was seeded four years ago on four acres. The stand has been thin and slow to develop. Alsike and Ladino clovers were interseeded in 1998 for additional ground cover and feed. The steers grazed this as part of the transition to grazing corn in 1998. Big Bluestem was seeded on approximately two acres. No-till corn was then planted with 100 pounds of nitrogen also applied during the seeding year. Where the corn was thin the Big Bluestem was also.

In 1998 a four-acre contour strip of alfalfa and rye grass next to the pasture was fenced off, and after the first cutting of hay was removed, corn was planted in about 1/3 of the strip. Gramoxone Extra was used to suppress the growth of the hay where the corn was direct seeded. With the plentiful moisture after planting the corn, the alfalfa came back quickly and slowed the growth of the corn.

The corn was grazed for eight days in mid July at three to five feet in height and prior to tasseling. The alfalfa in the strip was blooming. The steers aggressively grazed the corn-hay mix portion of the strip first before grazing on the remaining alfalfa. The steers were given up to ½ acre per day of the corn and alfalfa. There was a transition period for the first three days when they were on the summer grass pasture 12 hours and then on the corn-alfalfa pasture for 12 hours. After that they were moved daily.

Variable density grazing was demonstrated as a management practice. The 51 acres of pasture were divided into five larger fields with permanent exterior fences. These larger fields could be subdivided further into various sized paddocks. A total of 23 paddocks ranging in size from 1.2 to 6.6 acres were identified and combined as needed during the grazing season. The stocking density was varied by adjusting paddock sizes based on the amount of forage available and days planned for grazing.

Salt and minerals were provided free choice. There was no supplemental energy feeding in 1996 or in 1998. In 1997 beginning July 21 the steers were fed a pelleted feed of oat screenings with an ionophore added. They were fed via a portable bunk constructed from on old ear corn elevator.

Buy-sell, retained ownership and networking information on the steers for the three years follows:
1996 – Fifty steers averaging 502 pounds were purchased on March 18 at a local sale barn for $64 per hundredweight. Twenty-two were sold on July 31 at an average weight of 778 pounds and $61 per hundredweight. Twenty-seven were sold on September 17 at an average weight of 729 pounds and $63 per hundredweight. One steer died.
1997 – Fifty-four steers averaging 575 pounds were purchased at a county sale barn on April 1 for $82.51 per hundredweight. Forty-five head weighing 845 pounds were placed in an area feedlot on August 11 and custom fed. Ownership of the cattle was retained by the AJDF. Market value at the time of placement was $72 per hundredweight. The nine remaining steers weighing an average of 652 pounds were sold on September 3 for $83.50 per hundredweight.
1998 – Thirty-four were bought on February 24 weighing an average of 511 pounds in a partnering arrangement with Laura's Lean Beef. Thirty were purchased on May 2 weighing an average of 480 pounds from a local producer. Fifty-seven head went to the feedlot on August 19. Ownership of the cattle was retained by the AJDF. Market value at the time of placement was $70 per hundredweight. The remaining seven head were sold locally for $64 per hundredweight.

Results and Discussion

Tables 1 and 2 show grazing performance data for 1996 to 1998. The earliest date grazing started was April 20 and the latest was May 2. The average days grazing per head of the groups ranged from 92 to 140 days. Average daily gains of the groups ranged from 1.1 to 2.25 pounds per day.

Table 3 summarizes the animal production on the 51 acres used for grazing the steers. When extra acres were used in 1998, estimated production during those days was subtracted. For the 3 years of the demonstration the following averages were realized: 121 animal days of grazing, 1.1 head per acre stocking rate, 1.85 average daily gain, and 228 pounds of gain per acre. These numbers give some measure of the biological efficiency of the land and grazing system being used.

Production in grazing systems is related to rainfall. Table 4 provides the rainfall data for the Andrew Jackson Demonstration Farm.

Table 5 provides some financial information. Purchase price is the actual price or assigned price based on local markets at the time animals went to pasture. Sale price is similar to the actual price or assigned price when the animals went to the feed yard. Value of the gain is the sale value minus the purchase value divided by the pounds of gain. The value of gain per pound was positive for 1996 and 1997 at $.58 and $.52 whereas in 1998 it was - $.04.

Pasture cost per pound of gain ranged from $.12 - $.16. It was higher in 1998 as a result of a higher stocking rate and lower gains. Rent per acre based on $11.00 per animal unit month came to $29, $30 and $34, respectively, for each year.

Average daily gain and gain per acre are measures of biological efficiency and can be useful to compare various pasture grazing programs. The production data collected during this demonstration provide a track record for the farm to use in evaluating the grazing system from year to year and to use in budgeting. Average daily gains for the first two years were over 2 lbs. per day. Year three was off at 1.44 lbs. per day. Several factors contributed to this, such as a 14% higher stocking rate than 1997 in combination with a dry July and the second group of stockers just not performing at the level of previous groups. These factors also affected the pasture gain per acre, which was 15% and 21% less than the previous years, respectively.

Value of gain is useful in making decisions on buying and selling. The gross value of gain per acre was $135 in 1996 and $149 in 1997 or a value per pound of $.58 and $.59 for each year, respectively. In 1998 the numbers were negative primarily because of two factors – a wider buy-sell spread and reduced gains compared with previous years.

One way to evaluate pasture systems is to look at income over pasture and supplement costs per acre. This is the amount remaining to cover supplies, interest, death loss, marketing expenses, veterinarian costs as well as having something for labor and management. The income over pasture and supplement costs per acre was $104.61 and 107.74 for 1996 and 1997, respectively. For 1998 there was a loss of $46.52 per acre. The major impacting factor for this was the wide buy-sell margin. The wider this margin the lower all costs must be. It is also a situation where retaining ownership should be considered. This is what the AJDF board did with most of the 1998 steers.

Implications

Management intensive grazing strategies used at the Andrew Jackson Demonstration Farm have resulted in reasonable gains by stockers with the types of land and pastures being grazed. It provides area producers with some indication of the performance that can be expected with a management intensive grazing system.
The economic measures can be decision aids that may be useful in deciding when to buy, how many to buy, whether to buy or just rent the pasture, or whether to custom-graze instead of buy. The bottom line is still profit. Buy-sell margins greatly impact the profit potential of a summer grazing program as was evident in 1998. Thus each year requires the pushing of the pencil to evaluate opportunity and risks for that year's summer grazing season.

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Table 1: 1996 & 1997 Steer Grazing Performance Data

	1996	1996	1997	1997
Item	**Group 1**	**Group 2**	**Group 1**	**Group 2**
Number	**22**	**27**	**45**	**9**
Date Started Grazing	**May 1**	**May 1**	**Apr. 25**	**Apr. 25**
Date Ended	**July 31**	**Sept 17**	**Aug. 8**	**Sept. 3**
Days Grazed	**92**	**140**	**108**	**131**
Ave. Beginning Weight (lbs.)	**643**	**523**	**603**	**433**
Ave. Ending Weight (lbs.)	**829**	**813**	**845**	**652**
Ave. Daily Pasture Gain (lbs.)	**2.02**	**2.07**	**2.25**	**1.7**
Ave. Total Gain/hd (lbs.)	**186**	**290**	**242**	**219**

Table 2: 1998 Steer Grazing Performance Data

	1998	1998	1998
Item	**Group 1**	**Group 2**	**Group 3**
Number	**34**	**23**	**7**
Date Started Grazing	**April 20**	**May 2**	**May 2**
Date Ended	**Aug. 19**	**Aug. 19**	**Sept. 19**
Days Grazed	**121**	**109**	**137**
Ave. Beginning Weight (lbs.)	**603**	**480**	**480**
Ave. Ending Weight (lbs.)	**811**	**598**	**638**
Ave. Daily Pasture Gain (lbs.)	**1.72**	**1.1**	**1.15**
Ave. Total Gain/hd (lbs.)	**208**	**118**	**158**
Ave. Total Gain/hd minus 8 days of grazing other acres	**194**	**109**	**149**

Table 3: Summary of AJDF Steer Grazing Performance

Summary of Grazing on 51 Acres	**1996**	**1997**	**1998**	**3 Year Ave.**
Total Animal Days of Grazing	**5804**	**6039**	**7068**	**6,304**
Animal Days of Grazing per Acre	**113**	**112**	**138**	**121**
Stocking Rate, Steers per Acre	**.98 (1st 92 days)**	**1.1 (1st 108 days)**	**1.25 (mid. 109 days)**	**1.1**
Total Pounds Gained on Pasture	**11,922**	**12,861**	**10,156**	**11,646**
Average Daily Gain for Season	**2.05**	**2.13**	**1.44**	**1.85**
Pounds of Pasture Gain per Acre	**233**	**252**	**199**	**228**

Table 4: Rainfall (inches)

Month	Normal	1996	1997	1998
April	3.0	3.30	1.42	3.90
May	3.5	7.75	4.85	3.10
June	3.8	7.50	8.45	7.23
July	3.5	3.47	1.95	1.80
August	3.3	2.35	4.11	7.50
September	3.0	3.70	1.92	4.70
Totals	20.1	28.07	22.70	28.23

Table 5: Financial Information

Year	1996	1997	1998
Group 1 purchase price/cwt.	$64.00	$82.51	$90.54
Group 2 purchase price/cwt.	$64.00	$82.51	$95.00
Group 3 purchase price/cwt.			$95.00
Group 1 sale price/cwt.	$61.00	$72.00	$70.00
Group 2 sale price/cwt.	$63.00	$83.50	$70.00
Group 3 sale price/cwt.			$64.00
Total pounds purchased	25,093	31,032	34,902
Total pounds sold	36,799	43,893	45,797
Pounds of gain	11,706	12,861	10,895
Total value of gain	$6,781	$6,674	($455)
Value of gain/lb.	$.58	$.52	($.04)
Value of gain/acre	$132.96	$130.86	($8.92)
Pasture rent at $11/AUM	$1,485	$1,529	$1,749
Per acre rent	$29	$30	$34
Pasture cost of gain/lb.	$.13	$.12	$.16
Total supplemental feed costs	$78	$558	$184
Supplemental feed costs/lb. of gain	$.006	$.043	$.017
Pasture & feed costs/lb. of gain	$.136	$.163	$.177